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10/823,241	04/12/2004	Susan Gaye Elkington	200401303-1	4068

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EXAMINER

NAM, HYUN

ART UNIT	PAPER NUMBER
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2184

NOTIFICATION DATE	DELIVERY MODE
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ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/823,241	Applicant(s) ELKINGTON ET AL.	
	Examiner Hyun Nam	Art Unit 2184	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 May 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 19-21 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The phrase, 'a tangible processor usable medium' in the claims 19-21 are a non-statutory subject matter (see MPEP 2106.01) because the definitions found in the disclosure did not exclude an unpatentable medium such as an optical, electromagnetic, and/or propagating signal (see Instant Application, Paragraph 58, Lines 7 and 14. An amendment deleting evidence relied upon does not remove it from the original disclosure to overcome, the rejection must be accompanied by a clear disavowal of the deleted subject matter). Since, 'a tangible processor usable medium' could be construed as optical, electromagnetic, and/or propagating signal medium, 'a tangible processor useable medium' then would not be any of the statutory subject matter, a "process, machine, manufacture, or composition of matter."

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-21 are rejected under 35 U.S.C. 103(a) as obvious over Dandrea et al. (U.S. Application Publication 2002/0013864), herein after referred to as Dandrea '864, in view of Gunlock (U.S. Patent 6,922,414), herein after referred to as Gunlock '414.

Referring to claim 1, Dandrea '864 teaches, as claimed, a method of managing resource usage (see Abstract, Lines 1 and 2) comprising:

pushing commands indicating accesses (forward request S to associated disk queue, see Fig. 3, Step 390) of at least one resource (see Fig. 2, Hard Disk 120) onto at least one respective resource queue (see Fig. 2, Internal Disk Queue 125);

monitoring queue depth (see Fig. 5, Steps 560 and 570; A Step 560 checks to see if Internal Disk Queues are Full) in the at least one resource queue and for a

predetermined level of resource consumption (Note, checking if a disk queue is full is monitoring for a predetermined level of resource consumption);

preventing issue of subsequent commands (see Fig. 5, Step 300; When Internal Disk Queue is not Full and three of SDS Queues are not Empty then SDS Selection sub-routine is called in Fig. 3; see Fig. 3, Steps 315 and 325; If accepting new request keeps from existing request(s) to miss the deadline(s) then the new request will be discarded which prevent its access to the Disks) from a client (see Fig.1, Subscribers 160) of at least one client to a server (see Fig. 1, Video Server 110) of at least one server in response to a command (see Fig. 5, Step 520; The SSQ handles Steady-State Request or command) from the client to server that increases resource consumption to the predetermined level (Note, subscribers requesting services from the video server will increase resource consumption to the level stated above);

pushing an identifier (see Fig. 1, Subscriber1; Note, it is implicit that the Video Server 110 has identified the Subscriber1) of the client/server combination onto a waiting queue (see Fig. 2, New Subscriber Queue1) associated with a resource (see Fig. 2, Disk1) for which the resource consumption is increased to the predetermined level (see Paragraph 32; Note, requests in SSQ are ordered by time deadline or by predetermine level of consumption of data on Disk but the requests in the NSQ do not generally have deadlines and they are ordered on a

first come first serve basis; therefore, request in NSQ are in a waiting queue to be serviced when the service is ready);

detecting a decline in consumption of a resource of the at least one resource (see Fig. 5, Step 570; Note, checking for empty queue is detecting a decline in consumption of a queue resource corresponding to Disks resource);

popping a client/server combination identifier from a waiting queue (see Fig. 3, Steps 340 and 370; The request S is removed from NSQ) associated with the resource for which a decline in consumption is detected in order (see Fig. 5, Step 530; The SSQ ordered by the time deadline) of queuing (see Fig. 5, Step 560 and 570; When Internal Disk Queue is not full and all SDS Queues are empty then the demand on the resource has declined); and

re-enabling issue of commands (see Fig. 3, Steps 340 and 370; NSQ holds New Subscriber Request such as request to rewind or replay of videos) from the client to the server designated by the popped client/server combination identifier (see Fig. 3, Step 390).

Dandrea '864 does not disclose expressly:

identifying the client and the server for which command increases resource consumption to the predetermined level as a client/server combination identifier; and

the waiting queue for queuing a plurality of client/server combination identifiers

Gunlock '414 does disclose:

identifying the client and the server (frame header, see Fig. 5, D_ID 502 and S_ID 504; Note, the packet frame contains source to destination information), for which command increases resource consumption to the predetermined level (command queue overflow, see Column 10, Line 51) as a client/server combination identifier (D_ID/S_ID, see Column 10, Line 6 and Fig. 6/7; Note, device specific access request leads to identifying LUN); and

the waiting queue (command queue, see Column 10, Line 51) for queuing a plurality of client/server combination identifiers (command frame, see Column 2, Lines 33-36).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to include the client/server identifiers into the headers of entries into New Subscriber Queue.

The suggestion/motivation for doing so would have been to keep track of and maintain the integrity of the subscriber request which requests a certain video and the disk resource from the server which stores subscriber's desired video. For example, one of ordinary skilled in the art would be highly motivated to maintain that steady stream of video from a right Disk resource to a right Subscriber by maintaining the Subscriber/Resource identifications in the queues.

As to claim 2, the modification teaches the method according to Claim 1 further comprising:

managing resource usage for clients that require a specific resource (see Dandrea '864, Fig. 1, Hard Disks 120).

As to claim 3, the modification teaches the method according to Claim 1 further comprising:

enabling issue of commands (see Dandrea '864, Fig. 3, Step 390; Note, a request from NSQ has been forwarded to Internal Disk Queues so that video stream can be provided) from a client (see Dandrea '864, Fig.1, Subscriber1) to a server (see Dandrea '864, Fig. 1, Video Server 110) identified by a client/server combination identifier (D_ID/S_ID, see Gunlock '414, Column 10, Line 6) in order

of queuing (see Dandrea '864, Paragraph 8, Lines 6 and 7) as resource availability is restored (see Dandrea '864, Paragraph 44, Lines 2-4).

As to claim 4, the modification teaches the method according to Claim 1 further comprising:

receiving a command (new subscriber request, see Dandrea '864, Paragraph 30) from a client (see Dandrea '864, Fig. 1, Subscriber1) to a server (see Dandrea '864, Fig. 1, Video Server 110) that increases consumption (Note, a new subscriber request is made to consume video data stream) of a resource (see Dandrea '864, Fig. 1, Hard Disk1) to a predetermined resource consumption condition (Note, subscribers requesting services from the video server will increase resource consumption to the level stated above);

setting a flag (see Dandrea '864, Fig. 5, Step 580; A SELECT flag set to TRUE after performing Step 300 from Fig. 3) indicative of the predetermined resource condition (Note, a selection procedure for Disks are indicative of the predetermined resource condition);

allowing the command to complete (see Dandrea '864, Fig. 3, Step 390); and

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rejecting subsequent commands issued by the client to the server (see Dandrea '864, Fig. 3, Step 325).

As to claim 5, the modification teaches the method according to Claim 1 further comprising:

detecting an increase (see Dandrea '864, Fig. 5, Step 560; Checking to see if Internal Disk Queue is full detects an increase) in consumption of a resource (see Dandrea '864, Fig. 1 Hard Disks 120s) to a level above a preselected limit (see Dandrea '864, Fig. 5 Step 560; Determination of what amount of request in the queue is Full condition is the pre-selected limit); and

pushing an the client/server combination identifier (D_ID/S_ID, see Gunlock '414, Column 10, Lines 6) of the client/server combination identifier on a waiting queue (see Dandrea '864, Fig. 2, New Subscriber Queue1) associated with the resource (see Dandrea '864, Fig. 2, Disk1).

As to claim 6, the modification teaches the method according to Claim 5 further comprising:

detecting a decline in consumption of the resource (see Fig. 5, Steps 560 and 570; When Internal Disk Queue is not full and all SDS Queues are empty then the demand on the resource has declined);

removing (see Fig. 3, Steps 360 and 370) a client/server combination identifier (D_ID/S_ID, see Gunlock '414, Column 10, Lines 6) from the waiting queue (see Dandrea '864, Fig. 2, New Subscriber Queue1) in the queue order (see Fig. 4, Step 530); and

enabling (see Fig. 3, Step 390) subsequent commands from a client to a server identified by the client/server combination identifier removed from the waiting queue for operation.

As to claim 7, the modification teaches the method according to Claim 1 implemented in a storage system (see Dandrea '864, Fig. 1, Video Server 110) further comprising:

at least one storage controller (see Dandrea '864, Fig. 1, Statistical Disk Scheduler 170);

at least one host adapter operational as a client (see Dandrea '864, Fig.1, Subscribers 160s);

at least one adapter/LUN (D_ID/S_ID, see Gunlock '414, Column 10, Lines 6 and Fig. 6/7; Note, device specific access request leads to identifying LUN) combination operational as a client/server combination (see Dandrea '864, Fig. 1, Subscriber1 and Video Server 110); and

at least one resource selected from a group consisting of dynamic caching structures (see Dandrea '864, Fig. 3, Step 380), queues (see Dandrea '864, Fig. 2, SDS Queues 200s), buffers (see Dandrea '864, Fig. 2, Disk Queues 125s), and remote copy resources (see Dandrea '864, Fig. 2, Hard Disks 120s).

As to claims 8-14, they are directed to a system to implement the method as set forth in claims 1/7, 6, 7, 2, 4, 5 and 6 respectively. Therefore, they are rejected on the same basis as set forth hereinabove.

As to claims 15-18, they are directed to a system to implement the method as set forth in claims 1, 4, 5 and 6 respectively. Therefore, they are rejected on the same basis as set forth hereinabove.

As to claims 19-21, they are directed to a computer readable medium having a readable program code to implement the system as set forth in claims 15-18 respectively. Therefore, they are rejected on the same basis as set forth hereinabove.

Response to Arguments

Applicant's arguments filed 05/07/2008 have been fully considered but they are not deemed to be persuasive.

Regarding the 35 U.S.C. §101, Applicant's a clear disavowal of the deleted subject matter would overcome these rejections.

Applicant argues, the claims specify two types of queues - (1) resource queues that hold accesses to the resources, and (2) waiting queues that hold identifiers of the client/server combinations for accessing the particular resources. In contrast, Dandrea as described by Bleidt do not disclose the claimed types of queues but rather only teach queues analogous to applicants' claimed resource queues which hold requests directed to resources. While Dandrea as described by Bleidt do identify steady-state queues, new subscriber queues, and other request queues - each of these identified queues hold accesses or requests to resources and are thus analogous to applicants' claimed resources queues. The queues disclosed by Dandrea as described by Bleidt do not operate as the claimed waiting queues wherein client/server identifiers are pushed onto the queue when resource consumption is increased and the identifiers are popped when resource consumption is decreased. Dandrea omits any discussion of such a waiting queue.

Examiner disagrees with applicant. The new ground of rejection to claim 1 above clarifies Examiner interpretation of claimed the resource queue and the waiting queue. However, Examiner further clarifies with following points:

Queued elements in the queue are by nature waiting. The New Subscriber Queue (NSQ) of Dandrea '864 is holding new subscriber request of the video stream that is stored in the Disk (a resource) until the commands in the Disk Queues (resource queue) are satisfied by serving the existing subscriber on a Steady State Queue (SSQ) which has higher priority then the NSQ (see Paragraph 9). Similarly, waiting queue of Instant Application is waiting for the resource. It is opinion of the Examiner that the NSQ must be holding the subscriber and server information (i.e. id of the subscriber and type of the video stream that translates into disk and sector id); however, Dandrea '864 did not clearly disclose that both client and server identification are within the NSQ even though new subscriber id has been implied. The Gunlock '414 does disclose that both client and server identifications are in a queue. Combination and motivation has been explained above. When the new subscriber finally has access to the steady stream of video, the new subscriber becomes a steady state subscriber in a SSQ which re-enable issue of commands to the Disk via Disk Queue.

Regarding the claim objections, Applicant's response and amendment has overcome these objections.

Conclusion

The prior arts made of record and not relied upon are considered pertinent to applicant's disclosure:

Cowger et al. (U.S. Patent 6,314,477) discloses performance of fibre channel protocol sequence reassembly using expected frame information and buffer list calculation;

Pandya (U.S. Patent 7,376,755) discloses TCP/IP processor and engine using RDMA to handle storage flow where the client/server identifiers are queued and de-queued; and

Smith et al. 'Techyon: A Gigabit Fibre Channel Protocol Chip' discloses messaged based command queues utilized in fibre channel storage controller.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hyun Nam whose telephone number is (571) 270-1725. The examiner can normally be reached on Monday through Friday 8:30 AM to 5:00 PM EST. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Henry Tsai can be reached on (571) 272-4176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status

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information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Eddie P Chan/

Supervisory Patent Examiner, Art Unit 2183